MULTIPLE SCLEROSIS PROFILE

What is Multiple Sclerosis?

- Multiple sclerosis (MS) is a chronic, inflammatory disease of unknown etiology that involves an **immune-mediated attack on the central nervous system**
- Targets of the immune attack include the **myelin** coating around nerve fiber axons, the axons themselves, and the oligodendrocytes that produce myelin
- In most patients, MS begins with a relapsing-remitting course that eventually transitions to a more steadily progressive course
- **Central myelin and the oligodendrocytes** that form central myelin appear to be the primary targets of the inflammatory attack, although the axons themselves are also damaged.
- Gray matter lesions also occur early in the disease, and may even precede damage to the white matter
- The collective damage to white and gray matter results in a broad spectrum of clinical signs and symptoms.

Clinical Diagnosis of MS

Signs & Symptoms Consistent with Demyelinating Disease

Visual	blurred vision; unilateral loss of vision; oscillopsia; diplopia
Motor	Trunk/limb weakness; spasticity; hyperreflexia; balance problems
	numbness; paresthesias; dysesthesias; Lhermitte's sign; "MS hug"; trigeminal neuralgia; allodynia; hyperpathia; proprioception deficits
Cerebellar	tremor; ataxia; incoordination
Genitourinary	Urgency/frequency/retention incontinence; frequent UTI; constipation; impotence
Neuropsychiatric	impairment of memory, concentration, attention, and /or processing speed; depression; irritability; anxiety
Prominent intractable fatigue with no other cause	

Diagnostic Criteria for MS

In order to make a diagnosis of MS, the physician must:

- Find evidence of damage in at least two separate areas of the central nervous system (CNS), which includes the brain, spinal cord and optic nerves AND
- Find evidence that the damage occurred at least one month apart AND
- Rule out all other possible diagnoses

The criteria (now referred to as **The Revised McDonald Criteria**) were further revised in 2005 and again in 2010 to make the process even easier and more efficient

Tests included in MS profile @ Metropolis

- Myelin associated glycoprotein (MAG)
- Oligoclonal band
- CSF IgG Index

Oligoclonal Band

- Oligoclonal bands (OCB) are proteins called immunoglobulins, which suggest inflammation of the central nervous system. The presence of oligoclonal bands may be a sign of multiple sclerosis

- Abnormal CSF IgG indexes and OCB patterns have been reported in 70% to 80% of MS patients

- At least 1 of these tests has been reported to be positive in 90% of MS patients when both test are performed

Oligoclonal Bands

Oligoclonal Bands

- A finding of **2 or more cerebrospinal fluid (CSF)-specific bands** (ie, bands that are present in CSF but are absent in serum) is consistent with multiple sclerosis. The number of bands in the oligoclonal patterns does not correlate with disease severity or prognosis

- OCB & elevated CSF IgG levels are present in other disease states including meningoencephelitis, neurosyphilis, G.B Syndrome and meningeal carcinomatosis

CSF IgG index

- Elevation of IgG levels in the cerebrospinal fluid (CSF) of patients with inflammatory diseases of the central nervous system (multiple sclerosis [MS], neurosyphilis, acute inflammatory polyradiculoneuropathy, subacute sclerosing panencephalitis) is due to local central nervous system (CNS) synthesis of IgG.
- The CSF index is the CSF IgG to CSF albumin ratio compared to the serum IgG to serum albumin ratio
- The CSF index is, therefore, an indicator of the relative amount of CSF IgG compared to serum. Any increase in the index is a reflection of IgG production in the CNS

CSF IgG Index in MS

- Cerebrospinal fluid (CSF) IgG index is positive **(elevated) in approximately 80% of patients with multiple sclerosis (MS).**
- Oligoclonal banding in CSF is also positive in approximately 80% of patients with MS.
- The use of **CSF index plus oligoclonal banding** has been reported to **increase the sensitivity to over 90%.**
- The index is independent of the activity of the demyelinating process.

Report format